**Question**

A solution containing 150 g of lead (II) nitrate is combined with a solution containing 200 g of sodium iodide? list the compound and the mass before the reaction and the mass after the reaction
(SOLVE BY USING STOICHIOMETRY)

**Answer:**

$$Pb(NO_3)_2 + 2\ NaI = PbI_2\downarrow + 2\ NaNO_3$$
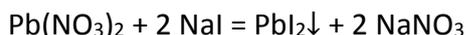
$n(Pb(NO_3)_2)=m(Pb(NO_3)_2)/M(Pb(NO_3)_2)=150/331=0.453\ (mol)$

$n(NaI) = m(NaI)/M(NaI) = 200/150 = 1.333\ (mol)$

$n(NaI)/2 > N(Pb(NO_3)_2)$ so we have excess of NaI.

That's why:

$n_{after}(Pb(NO_3)_2) = 0\ (mol)$

$n_{after}(NaI) = 1.333-0.453*2 = 0.427\ (mol)$

$n_{after}(PbI_2) = 0.453\ (mol)$

$n_{after}(NaNO_3) = 2*0.453 = 0.906\ (mol)$

$m_{after}(NaI) = M(NaI)*n_{after}(NaI) = 150*0.427 = 64(g)$

$m_{after}(PbI_2) = M(PbI_2)*n_{after}(PbI_2) = 461*0.453 = 209(g)$

$m_{after}(NaNO_3) = 2*M(NaNO_3)*n_{after}(NaNO_3) = 2*85*0.453 = 77(g)$

| | $Pb(NO_3)_2$ | NaI | $PbI_2$ | $NaNO_3$ |
|---|---|---|---|---|
| $m_{before}$, g | 150 | 200 | 0 | 0 |
| $m_{after}$, g | 0 | 64 | 209 | 77 |